

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: R G. Towner Examiner #: 69636 Date: 2/7/03
 Art Unit: 1651 Phone Number: 301-8-0732 Serial Number: 09/759,815
 Mail Box and Bldg/Room Location: 11301 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Jan Delaval
 Reference Librarian
 Biotechnology & Chemical Library
 CM1 1E07 - 703-308-4498
 jan.delaval@uspto.gov

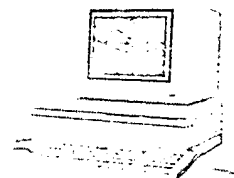
STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>Jan</u>	NA Sequence (#) <u>-1</u>	STN <u>✓</u>
Searcher Phone #: <u>4498</u>	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: <u>2/10/03</u>	Bibliographic <u>✓</u>	Dr.Link _____
Date Completed: <u>2/12/03</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>15</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>1-65</u>	Other _____	Other (specify) _____

BioTech-Chem Library

Search Results

Feedback Form (Optional)



Scientific & Technical Information Center

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact *the BioTech-Chem searcher* who conducted the search *or contact*:

Mary Hale, Supervisor, 308-4258
CM-1 Room 1E01

Voluntary Results Feedback Form

➤ *I am an examiner in Workgroup:* (Example: 1610)

➤ *Relevant prior art **found**, search results used as follows:*

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art **not found**:*

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Search results were not useful in determining patentability or understanding the invention.

Other Comments:

Drop off completed forms at the **Circulation Desk CM-1**, or send to Mary Hale, **CM1-1E01** or e-mail mary.hale@uspto.gov.

=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 13:48:52 ON 16 FEB 2003
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FILE COVERS 1907 - 16 Feb 2003 VOL 138 ISS 8
FILE LAST UPDATED: 14 Feb 2003 (20030214/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d his

(FILE 'HOME' ENTERED AT 13:30:45 ON 16 FEB 2003)
SET COST OFF

FILE 'REGISTRY' ENTERED AT 13:31:04 ON 16 FEB 2003
E N-ACETYL-D-GLUCOSAMINE/CN

L1	1 S E3
L2	302 S C8H15NO6/MF
L3	70 S L2 AND GLUCO?
L4	22 S L3 AND 2 ACETYLAMINO
L5	7 S L4 NOT (14C# OR 13C# OR 11C# OR C14# OR C13# OR C11# OR (D OR
L6	7 S L1,L5
	E PECTINASE/CN
L7	1 S E3
	E POLYGALACTURONASE/CN
L8	1 S E3
	E PECTINESTERASE/CN
L9	1 S E3
	E PECTIN LYASE/CN
L10	1 S E3
	E HEMICELLULASE/CN
L11	1 S E3
L12	4 S L7-L11
L13	612 S (?GALACTURONASE? OR ?PECTINESTERASE? OR PECTIN LYASE OR ?HEMI
L14	608 S L13 NOT L12
L15	26 S L14 NOT SQL/FA
L16	15 S L15 AND 1/NC
L17	14 S L16 NOT FRAGMENT
L18	594 S L14 NOT L17

FILE 'HCAPLUS' ENTERED AT 13:36:21 ON 16 FEB 2003

FILE 'REGISTRY' ENTERED AT 13:36:25 ON 16 FEB 2003
E CHITIN/CN

L19 1 S E3

FILE 'HCAPLUS' ENTERED AT 13:36:33 ON 16 FEB 2003

L20 6385 S L19

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L21 11703 S CHITIN
 E CHITIN
 L22 12050 S E3,E5,E6,E15,E17,E18,E25,E29,E30,E31,E43,E47,E51,E67,E69
 L23 260 S E85,E95
 L24 12133 S L20-L23
 E LECTIN/CT
 E E6+ALL
 E E2+ALL
 L25 19976 S E2,E3
 E LECTIN
 L26 33755 S E2,E3,E8,E9
 L27 23926 S E38
 L28 319 S L24 AND L25-L27
 L29 7296 S L12
 L30 5564 S L17
 L31 243 S L18
 L32 3 S L28 AND L29-L31
 L33 9540 S ?PECTINASE? OR ?GALACTURONASE? OR ?PECTINESTERASE? OR ?PECTIN
 L34 4 S L28 AND L33
 L35 4 S L32,L34
 L36 3 S L35 AND L6
 L37 3 S L35 AND (N ACETYL D GLUCOSAMINE OR ?GLUCOSAMIN?)
 L38 4 S L35-L37
 L39 3 S L38 NOT TEXTILE/TI
 E POTTS S/AU
 L40 6 S E6,E12,E13
 E SLAUGHTER D/AU
 L41 26 S E3,E4,E13
 E THOMPSON J/AU
 L42 395 S E3,E20-E23
 E THOMPSON JAMES/AU
 L43 53 S E3,E23
 E THOMPSON JIM/AU
 L44 4 S E3
 L45 1 S E6
 E PAYNE J/AU
 L46 49 S E3,E21,E22
 E PAYNE JENNIFER/AU
 L47 8 S E3,E4
 L48 1 S E1
 E COHEN B/AU
 L49 80 S E3-E5
 L50 1 S E26
 L51 5 S L40-L50 AND L24
 L52 5 S L51 AND L25-L31
 L53 2 S L51 AND L33
 L54 2 S L51-L53 AND L39
 L55 3 S L39,L54
 L56 3 S L51-L53 NOT L55
 L57 6 S L54-L56 AND L20-L56
 SEL RN

FILE 'REGISTRY' ENTERED AT 13:48:04 ON 16 FEB 2003

L58 18 S E1-E18

FILE 'HCAPLUS' ENTERED AT 13:48:26 ON 16 FEB 2003

L59 6 S L58 AND L57

FILE 'HCAPLUS' ENTERED AT 13:48:52 ON 16 FEB 2003

=> d all hitstr tot l59

L59 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:595492 HCAPLUS
 DN 137:121957
 TI Detection and removal of microorganism contamination
 IN Potts, Steven J.; Slaughter, David C.; Thompson,
 James F.; Payne, Jennifer J.; Cohen, Barb Ariel
 PA USA
 SO U.S. Pat. Appl. Publ., 23 pp., Cont.-in-part of U.S. Ser. No. 519,533.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM A61K038-16
 ICS C07K014-42
 NCL 514008000
 CC 9-16 (Biochemical Methods)
 Section cross-reference(s): 10, 11, 17

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002107179	A1	20020808	US 2001-759815	20010110
	WO 2001067102	A2	20010913	WO 2001-US6774	20010302
	WO 2001067102	A3	20020510		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	EP 1261872	A2	20021204	EP 2001-913259	20010302
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
PRAI	US 2000-519533	A2	20000306		
	US 2001-759815	A	20010110		
	WO 2001-US6774	W	20010302		
AB	This invention provides novel methods for the detection of chitinous contaminants of non- chitinous biol. materials. The methods are accurate, highly reproducible, rapid and relatively inexpensive. The methods are well suited to com. applications, particularly in the food and agriculture industry where biol. materials (e.g. food products) are regularly screened for contaminants (e.g. insect, mold, fungus, etc.). In one embodiment, the methods involve contacting a biol. sample with a probe that is a lectin that binds chitin , contacting the sample with a pectinase ; and detecting binding of said lectin to a chitin where the binding indicates the presence of chitin in the biol. sample.				
ST	detection microorganism contamination				
IT	Centrifuges (Flow-through; detection and removal of microorganism contamination)				
IT	Fluorometers (Surface-reading; detection and removal of microorganism contamination)				
IT	Interface (Transparent; detection and removal of microorganism contamination)				
IT	Optical filters (bandpass; detection and removal of microorganism contamination)				
IT	Agriculture and Agricultural chemistry Alternaria Alternaria alternata Animal Animal tissue Apple Arthropoda				

Fusarium
 Fusarium oxysporum
 Geotrichum
 Geotrichum candidum
 Grape
 Heating
 Homogenization
 Illumination
 Insecta
 Isotope indicators
 Lemon (Citrus limon)
 Magnetic materials
 Microorganism
 Mold (fungus)
 Oomycetes
 Orange
 Pepper (Piper)
 Phytophthora
 Phytophthora nicotianae
 Pokeweed
 Potato (Solanum tuberosum)
 Pythium
 Pythium aphanidermatum
 Pythium ultimum
 Rhizopus
 Rhizopus stolonifer
 Rice (Oryza sativa)
 Seed
 Silage
 Size reduction
 Stemphylium
 Stemphylium botryosum
 Stinging nettle
 Test kits
 Textiles
 Tomato
 Vegetable
 Vibrio
 Wood
 Yeast
 Zygomycota
 pH

(detection and removal of microorganism contamination)

IT **Agglutinins and Lectins**

Antibodies
 Avidins
 Enzymes, uses
 Metals, uses
 Vicilin
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (detection and removal of microorganism contamination)

IT Wheat

(germ; detection and removal of microorganism contamination)

IT Proteins

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (heveins; detection and removal of microorganism contamination)

IT Albumins, analysis

RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (serum; detection and removal of microorganism contamination)

IT Fibers

RL: NUU (Other use, unclassified); USES (Uses)
 (spinning; detection and removal of microorganism contamination)

IT Centrifuges

(tubes; detection and removal of microorganism contamination)

IT 1398-61-4, Chitin
 RL: ANT (Analyte); ANST (Analytical study)
 (chitin-binding lectin chitovibrin, detection and removal of microorganism contamination)

IT 7512-17-6, N-Acetyl-D-glucosamine
 RL: ANT (Analyte); ANST (Analytical study)
 (detection and removal of microorganism contamination)

IT 58-85-5, Biotin 9013-20-1, Streptavidin
 9025-56-3, Hemicellulase 9025-98-3,
 Pectinesterase 9032-75-1, Pectinase
 9033-35-6, Pectin lyase
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (detection and removal of microorganism contamination)

IT 1398-61-4, Chitin
 RL: ANT (Analyte); ANST (Analytical study)
 (chitin-binding lectin chitovibrin, detection and removal of microorganism contamination)

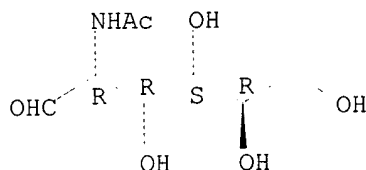
RN 1398-61-4 HCAPLUS
 CN Chitin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7512-17-6, N-Acetyl-D-glucosamine
 RL: ANT (Analyte); ANST (Analytical study)
 (detection and removal of microorganism contamination)

RN 7512-17-6 HCAPLUS
 CN D-Glucose, 2-(acetylamino)-2-deoxy- (9CI) (CA INDEX NAME)

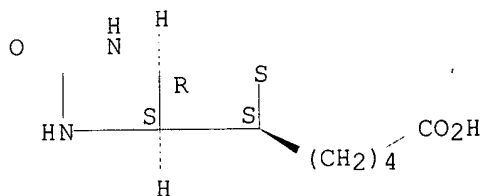
Absolute stereochemistry.



IT 58-85-5, Biotin 9013-20-1, Streptavidin
 9025-56-3, Hemicellulase 9025-98-3,
 Pectinesterase 9032-75-1, Pectinase
 9033-35-6, Pectin lyase
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (detection and removal of microorganism contamination)

RN 58-85-5 HCAPLUS
 CN 1H-Thieno[3,4-d]imidazole-4-pentanoic acid, hexahydro-2-oxo-,
 (3aS,4S,6aR)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



RN 9013-20-1 HCAPLUS
 CN Streptavidin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9025-56-3 HCAPLUS
CN Hemicellulase (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9025-98-3 HCAPLUS
CN Esterase, pectin (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9032-75-1 HCAPLUS
CN Polygalacturonase (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9033-35-6 HCAPLUS
CN Lyase, pectin (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L59 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:140684 HCAPLUS

DN 136:324277

TI Measuring mold infestation in raw tomato juice

AU Potts, S. J.; Slaughter, D. C.; Thompson, J.

F.

CS Biological and Agricultural Engineering Dept., University of California,
Davis, CA, 95616, USA

SO Journal of Food Science (2002), 67(1), 321-325

CODEN: JFDSA; ISSN: 0022-1147

PB Institute of Food Technologists

DT Journal

LA English

CC 17-1 (Food and Feed Chemistry)

AB A modified fluorescent **lectin** test for molded raw tomato juice was compared with both the visual mold inspection method conducted by the California Processing Tomato Advisory Board and the Howard mold count (HMC) conducted by 4 com. tomato processors. The assay quantifies fungal contamination by detecting fungal **chitin** using FITC-labeled **lectin** that selectively binds to **chitin**. The mold content of 100 naturally infected raw tomato juice samples was detd. using these 3 methods. The coeff. of detn. between the **lectin** assay and the HMC ($r^2 = 0.73$) was better than the coeff. of detn. between the California processing tomato visual mold inspection method and the HMC ($r^2 = 0.38$). The coeff. of detn. between the fluorescent **lectin** assay and the HMC ($r^2 = 0.73$) was comparable to the coeff. of detn. between different quality control labs.' HMC values, which ranged from $r^2 = 0.69$ to $r^2 = 0.81$. The fluorescent **lectin** assay had consistently better precision (av. CV = 8%) than the HMC (av. CV = 38%).

ST mold detection tomato juice fluorescent **lectin** assay

IT Food contamination

Mold (fungus)

Tomato juice

(mold infestation measurement in raw tomato juice by fluorescent **lectin** assay)

IT 1398-61-4, Chitin

RL: ANT (Analyte); ANST (Analytical study)

(mold infestation measurement in raw tomato juice by fluorescent **lectin** assay)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) AOAC; Official methods of analysis of AOAC International. 16th Ed. 5th Revision 1999, P63

(2) Bartlett, M; JRSS Suppl 1946, V8, P128

- (3) Brown, M; Techonometrics 1974, V16, P129
- (4) Eisenburg, M; Inf Let 1952, 1371, P36
- (5) Gourama, H; J Food Prot 1995, V58(12), P1389
- (6) Howard, B; Microscopical studies on tomato products 1917, V581 HCAPLUS
- (7) Howard, B; Tomato ketchup under the microscope with practical suggestions to insure a cleanly product 1911, Circular No 68
- (8) Levene, H; Contributions to probability and statistics 1960, P278
- (9) PTAB; Processing tomato inspection manual 1996
- (10) Payne, J; Personal communication 2000
- (11) Potts, S; J Food Sci 2000, V65(2), P346 HCAPLUS
- (12) Potts, S; PhD dissertation, University of California 2000

IT 1398-61-4, Chitin

RL: ANT (Analyte); ANST (Analytical study)
(mold infestation measurement in raw tomato juice by fluorescent
lectin assay)

RN 1398-61-4 HCAPLUS

CN Chitin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L59 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:677066 HCAPLUS

DN 135:223797

TI The detection and removal of microorganism contamination

IN Potts, Steven J.; Slaughter, David C.; Thompson,
James F.; Payne, Jennifer J.; Kohn, Barb Ariel

PA The Regents of the University of California, USA

SO PCT Int. Appl., 49 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM G01N033-53

ICS G01N033-569; C12Q001-34; G01N021-64

CC 9-16 (Biochemical Methods)

Section cross-reference(s): 10, 17

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001067102	A2	20010913	WO 2001-US6774	20010302
	WO 2001067102	A3	20020510		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,				
	HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,				
	LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO,				
	RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ,				
	VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,				
	DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,				
	BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 2002107179	A1	20020808	US 2001-759815	20010110
	EP 1261872	A2	20021204	EP 2001-913259	20010302
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI	US 2000-519533	A	20000306		
	US 2001-759815	A	20010110		
	WO 2001-US6774	W	20010302		

AB This invention provides novel methods for the detection of
chitinous contaminants of non-**chitinous** biol. materials.
The methods are accurate, highly reproducible, rapid and relatively
inexpensive. The methods are well suited to com. applications,
particularly in the food and agriculture industry where biol. materials
(e.g. food products) are regularly screened for contaminants (e.g. insect,
mold, fungus, etc.). In one embodiment, the methods involve contacting a

biol. sample with a probe that is a **lectin** that binds **chitin**, contacting the sample with a **pectinase**; and detecting binding of said **lectin** to **chitin** where the binding indicates the presence of **chitin** in the biol. sample.

ST detection microorganism contamination

IT Centrifuges

(Flow-through; detection and removal of microorganism contamination)

IT Fluorometers

(Surface-reading; detection and removal of microorganism contamination)

IT Interface

(Transparent; detection and removal of microorganism contamination)

IT Optical filters

(bandpass; detection and removal of microorganism contamination)

IT Agriculture and Agricultural chemistry

Alternaria

Alternaria alternata

Animal

Animal tissue

Apple

Arthropod (Arthropoda)

Ascomycete (Ascomycota)

Barley

Basidiomycete (Basidiomycota)

Berry

Biological materials

Blanching

Botrytis

Botrytis cinerea

Centrifugation

Centrifuges

Cereal (grain)

Chytridiomycota

Cladosporium

Cladosporium herbarum

Colorimetric indicators

Concentration (process)

Containers

Crustacean (Crustacea)

Evaporation

Fermentation

Filtration

Flower

Fluorescence

Fluorescent substances

Fluorometers

Fluorometry

Food analysis

Food contamination

Forage

Freeze drying

Freezing

Fruit

Fruit and vegetable juices

Fungi

Fusarium

Fusarium oxysporum

Geotrichum

Geotrichum candidum

Grape

Heating

Homogenization

Illumination

Insect (Insecta)

Isotope indicators
 Lemon (Citrus limon)
 Magnetic materials
 Microorganism
 Mold (fungus)
 Oomycetes
 Orange
 Pepper (Piper)
 Phytophthora
 Phytophthora nicotianae
 Pokeweed
 Potato (Solanum tuberosum)
 Pythium
 Pythium aphanidermatum
 Pythium ultimum
 Rhizopus
 Rhizopus stolonifer
 Rice (Oryza sativa)
 Samples
 Seed
 Silage
 Size reduction
 Stemphylium
 Stemphylium botryosum
 Stinging nettle
 Test kits
 Textiles
 Tomato
 Vegetable
 Vibrio
 Washing
 Wood
 Yeast
 Zygomycota
 pH

(detection and removal of microorganism contamination)

IT **Agglutinins and Lectins**

Antibodies

Avidins

Enzymes, uses

Metals, uses

Vicilin

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (detection and removal of microorganism contamination)

IT **Wheat**

(germ; detection and removal of microorganism contamination)

IT **Proteins, specific or class**

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (heveins; detection and removal of microorganism contamination)

IT **Albumins, analysis**

RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (serum; detection and removal of microorganism contamination)

IT **Fibers**

RL: NUU (Other use, unclassified); USES (Uses)
 (spinning; detection and removal of microorganism contamination)

IT **Centrifuges**

(tubes; detection and removal of microorganism contamination)

IT **1398-61-4, Chitin**

RL: ANT (Analyte); ANST (Analytical study)
 (chitin-binding lectin chitovibrin, detection and
 removal of microorganism contamination)

IT **7512-17-6, N-Acetyl-D-glucosamine**

RL: ANT (Analyte); ANST (Analytical study)
(detection and removal of microorganism contamination)

IT 58-85-5, Biotin 9013-20-1, Streptavidin
9025-56-3, Hemicellulase 9025-98-3,
Pectinesterase 9032-75-1, Pectinase
9033-35-6, Pectin lyase 37332-03-9,
Fluorochrome

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(detection and removal of microorganism contamination)

IT 1398-61-4, Chitin

RL: ANT (Analyte); ANST (Analytical study)
(chitin-binding lectin chitovibrin, detection and
removal of microorganism contamination)

RN 1398-61-4 HCAPLUS

CN Chitin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

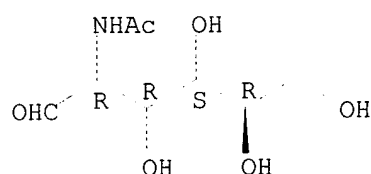
IT 7512-17-6, N-Acetyl-D-
glucosamine

RL: ANT (Analyte); ANST (Analytical study)
(detection and removal of microorganism contamination)

RN 7512-17-6 HCAPLUS

CN D-Glucose, 2-(acetylamino)-2-deoxy- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



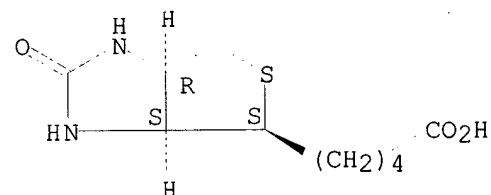
IT 58-85-5, Biotin 9013-20-1, Streptavidin
9025-56-3, Hemicellulase 9025-98-3,
Pectinesterase 9032-75-1, Pectinase
9033-35-6, Pectin lyase 37332-03-9,
Fluorochrome

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(detection and removal of microorganism contamination)

RN 58-85-5 HCAPLUS

CN 1H-Thieno[3,4-d]imidazole-4-pentanoic acid, hexahydro-2-oxo-,
(3aS,4S,6aR)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



RN 9013-20-1 HCAPLUS

CN Streptavidin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9025-56-3 HCAPLUS

CN Hemicellulase (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9025-98-3 HCAPLUS
CN Esterase, pectin (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9032-75-1 HCAPLUS
CN Polygalacturonase (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9033-35-6 HCAPLUS
CN Lyase, pectin (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 37332-03-9 HCAPLUS
CN Fluorochrome (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L59 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:467423 HCAPLUS

DN 136:84841

TI The effect of fungal species on the fluorescent **lectin** test

AU **Potts, S. J.; Thompson, J. F.; Slaughter, D.**
C.

CS Biological and Agricultural Engineering Department, University of
California, Davis, CA, 95616, USA

SO Journal of Microbiological Methods (2001), 46(3), 187-191

CODEN: JMIMDQ; ISSN: 0167-7012

PB Elsevier Science Ireland Ltd.

DT Journal

LA English

CC 17-1 (Food and Feed Chemistry)

AB Fungal (mold) contamination is an important indicator of low-quality raw product used in food processing operations. Fluorescent-labeled **lectins**, specific for **chitin**, were shown to be valuable for quant. detection of mold in raw tomatoes. In this research, the response of individual fungal species to a rapid fluorescent **lectin** assay was investigated. Ten of the most common mold species were grown on 2 types of artificial broth media, and added to blended field tomatoes. The assay was conducted on each species, and linear regressions were developed, comparing the fluorescent **lectin** assay score with the fungal dry wt. The assay was able to detect all molds at sensitivities required for the tomato industry, and had high linearity (r^2 ranging from 0.72 to 0.99) and low variability (std. error of calibration ranging from 20 to 116 μg of fungal biomass/mL of tomato juice) for individual species grown on V-8 juice broth.

ST **lectin** fluorescence mold food contamination

IT Alternaria alternata

Botrytis cinerea

Cladosporium herbarum

Fluorometry

Food analysis

Food contamination

Fusarium oxysporum

Geotrichum candidum

Mold (fungus)

Phytophthora nicotianae

Pythium aphanidermatum

Pythium ultimum

Rhizopus stolonifer

Stemphylium botryosum

Tomato juice

(fungal species effect on fluorescent **lectin** test for quant.
detection of mold in tomato)

IT **Agglutinins and Lectins**

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(fungal species effect on fluorescent **lectin** test for quant.
detection of mold in tomato)

IT **1398-61-4, Chitin**

RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(fungal species effect on fluorescent **lectin** test for quant.
detection of mold in tomato)

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Aoac; 14th edn Mold and Rot Fragments 1984, V44, P194
- (2) Bartnicki-Garcia, S; Annu Rev Microbiol 1968, V22, P87 HCAPLUS
- (3) Battilani, P; Ital J Food Sci 1996, V4, P283
- (4) Butler, E; Plant Dis Rep 1959, V43(2), P187
- (5) Cherif, M; Can J Microbiol 1993, V39, P213 HCAPLUS
- (6) Cousin, M; J Food Sci 1984, V49, P439 HCAPLUS
- (7) Eisenburg, M; Observations and suggestions on factory control of rot and extraneous matter in tomato products, Inf Lett No 1371 1952, P36
- (8) Jarvis, B; J Food Technol 1977, V12, P581 HCAPLUS
- (9) Jones, J; Compendium of Tomato Diseases 1991
- (10) Lin, H; J Food Prot 1985, V48, P671 HCAPLUS
- (11) Lin, H; J Food Sci 1985, V51, P180
- (12) Mislivec, P; J Food Prot 1987, V50(1), P38 HCAPLUS
- (13) Neter, J; Applied Linear Statistical Models 4th edn 1996
- (14) Patel, P; New Techniques in Food and Beverage Microbiology 1993, P31
- (15) Potts, S; J Food Sci 2000, V65(2), P346 HCAPLUS
- (16) Ptab; Processing Tomato Inspection Manual 1966, P27
- (17) Ride, J; Physiol Plant Pathol 1971, V1, P409
- (18) Sharma, P; Trans Br Mycol Soc 1977, V69(3), P479 HCAPLUS
- (19) Usda; United States Department of Agriculture, Technical inspection procedure:mold count 1978

IT **1398-61-4, Chitin**

RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(fungal species effect on fluorescent **lectin** test for quant.
detection of mold in tomato)

RN 1398-61-4 HCAPLUS

CN Chitin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L59 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:298214 HCAPLUS

DN 133:57785

TI A fluorescent **lectin** test for mold in raw tomato juice

AU **Potts, S. J.; Slaughter, D. C.; Thompson, J.**

F.

CS Biological and Agricultural Engineering Department, University of California, Davis, CA, 95616, USA

SO Journal of Food Science (2000), 65(2), 346-350

CODEN: JFDSA; ISSN: 0022-1147

PB Institute of Food Technologists

DT Journal

LA English

CC 17-1 (Food and Feed Chemistry)

AB Fungal (mold) contamination is an important indicator of low quality raw product in the processing tomato industry. A quant. **lectin** assay was developed that was less expensive, faster, and more precise than the industry std. Howard mold count. This assay, based on a fluorescent-labeled **lectin** isolated from wheat germ, had a selective affinity for the **chitin** in fungal cell walls. Assay values were correlated with mold contamination for 4 fungal species:

Alternaria alternata ($r^2 = 0.91$), *Cladosporium herbarum* ($r^2 = 0.75$), *Fusarium oxysporum* ($r^2 = 0.97$), and *Stemphylium botryosum* ($r^2 = 0.99$). Combining all 4 species, the **lectin** assay had a strong correlation ($r^2 = 0.76$) with a linearized Howard mold count.

ST mold detection tomato juice FITC **lectin**; fluorescence
lectin chitin mold detection juice

IT **Agglutinins and Lectins**

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(WGA (wheat germ agglutinin), FITC-labeled; fluorescent **lectin**
test for mold detection in tomato juice)

IT Cell wall

(assay based on fluorescent **lectin** affinity for
chitin in fungal cell walls for mold detection in tomato juice)

IT Tomato juice

(fluorescent **lectin** test for mold detection in)

IT *Alternaria alternata*

Cladosporium herbarum

Food analysis

Food contamination

Fusarium oxysporum

Mold (fungus)

Stemphylium botryosum

(fluorescent **lectin** test for mold detection in tomato juice)

IT **1398-61-4, Chitin**

RL: ANT (Analyte); BPR (Biological process); BSU (Biological study,
unclassified); ANST (Analytical study); BIOL (Biological study); PROC
(Process)

(assay based on fluorescent **lectin** affinity for
chitin in fungal cell walls for mold detection in tomato juice)

IT **27072-45-3D, FITC, agglutinin conjugates**

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(fluorescent **lectin** test for mold detection in tomato juice)

RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) AOAC; Association of Official Agricultural Chemists, 14th edition 1984,
V44, P194

(2) Bartlett, M; JRSS Suppl 1946, V8, P128

(3) Battilani, P; Ital J Food Sci 1996, V4, P283

(4) Brooks, S; Lectin histochemistry: a concise practical handbook 1997

(5) Brown, M; Technometrics 1974, V16, P129

(6) Cousin, M; Journal of Food Protection 1996, V59, P73 HCAPLUS

(7) Eisenburg, M; Inf Let No 1371 1952

(8) Gourama, H; J Food Prot 1995, V58, P1389

(9) Howard, B; Bureau of Chemistry, Circular No 68 1911

(10) Jarvis, B; Food and Beverage Mycology. 2nd edition 1987, P599

(11) Jarvis, B; J Appl Bacteriol 1983, V55, P325 MEDLINE

(12) Jarvis, B; J Food Technol 1977, V12, P581 HCAPLUS

(13) Levene, H; Contributions to probability and statistics 1960, P278

(14) Lin, H; J Food Prot 1985, V48, P671 HCAPLUS

(15) Lis, H; Ann Rev of Biochem 1986, V55, P3567

(16) PTAB; Processing tomato inspection manual 1996

(17) Patel, P; New Techniques in Food and Beverage Microbiology 1993, P31

(18) Patel, P; Trends in Food Sci & Technol 1992, V3, P35 HCAPLUS

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(20) Sharma, P; Trans Br Mycol Soc 1977, V69, P479 HCAPLUS

(21) Stoddard, R; J Med Microbiol 1978, V11, P315

(22) Williams, H; J Ass Pub Analysts 1968, V6, P6984

IT **1398-61-4, Chitin**

RL: ANT (Analyte); BPR (Biological process); BSU (Biological study,
unclassified); ANST (Analytical study); BIOL (Biological study); PROC
(Process)

(assay based on fluorescent **lectin** affinity for
chitin in fungal cell walls for mold detection in tomato juice)

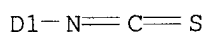
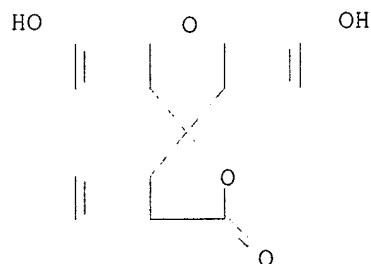
RN 1398-61-4 HCAPLUS
 CN Chitin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 27072-45-3D, FITC, agglutinin conjugates
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (fluorescent **lectin** test for mold detection in tomato juice)

RN 27072-45-3 HCAPLUS

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy-5(or 6)-isothiocyanato- (9CI) (CA INDEX NAME)



L59 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2003 ACS

AN 1983:157846 HCAPLUS

DN 98:157846

TI **Lectins** as cytochemical probes of the developing wheat grain.
 II. Reaction of wheat-germ **lectin** with the nucellar epidermis

AU Baldo, B. A.; Boniface, P. A.; Simmonds, D. H.

CS Wheat Res. Unit, CSIRO, North Ryde, 2113, Australia

SO Australian Journal of Plant Physiology (1982), 9(6), 663-75

CODEN: AJPPCH; ISSN: 0310-7841

DT Journal

LA English

CC 11-1 (Plant Biochemistry)

AB Fluorescein-labeled wheat-germ **lectin**, which has a specific binding affinity for **N-acetyl-D-**

glucosamine, reacted specifically with nucellar epidermal cell walls in frozen and JB-4-embedded sections of developing wheat grain. The reaction was completely inhibited by preincubation of the **lectin** with diacetylchitobiose or triacetylchitotriose, 2 sugars known to be good inhibitors of the wheat-germ **lectin** combining sites. Labeled **lectins** with different specificities, and labeled nonlectin proteins such as bovine serum albumin, failed to react. Reaction with the nucellar epidermis increased to a max. at approx. 14 days postanthesis (p.a.) and then progressively declined. At 35 days p.a., the clear fluorescence was visible only in the inner crease area. Labeled wheat-germ **lectin** did not stain the nucellar projection at any stage of the developmental period studied. Treatment of wheat grain sections with chitinase almost completely abolished reactivity between nucellar epidermal cell walls and the **lectin**. Reactivity was slightly diminished following treatment with cellulase, but **hemicellulase** and 2 preps. of **.beta.-N-acetyl-D-glucosaminidase** had no effect. These observations indicate the probable presence of a **chitinlike** structure in nucellar epidermal cell walls, which may be an endogenous saccharide receptor for wheat-germ **lectin** in developing or germinating wheat grains.

ST wheat grain **lectin** binding nucellus

IT **Agglutinins and Lectins**

RL: PROC (Process)

(from wheat germ, wheat grain nucellar epidermis binding of)

IT Wheat

(lectin binding by nucellar epidermis of)

IT 9001-06-3 9012-54-8 35061-50-8

38864-21-0

RL: BIOL (Biological study)

(lectin binding by wheat nucellar epidermis inhibition by)

IT 50-99-7, biological studies 59-23-4, biological studies

1811-31-0 7512-17-6 27939-30-6

RL: BIOL (Biological study)

(of wheat nucellar epidermis, lectin binding of)

IT 9001-06-3 9012-54-8 35061-50-8

38864-21-0

RL: BIOL (Biological study)

(lectin binding by wheat nucellar epidermis inhibition by)

RN 9001-06-3 HCAPLUS

CN Chitinase (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9012-54-8 HCAPLUS

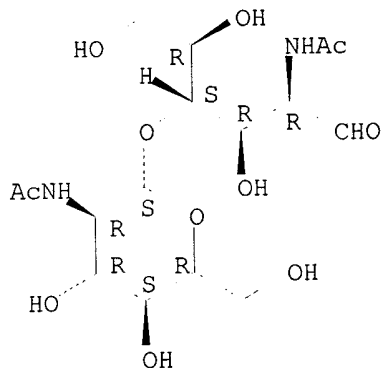
CN Cellulase (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 35061-50-8 HCAPLUS

CN D-Glucose, 2-(acetylamino)-4-O-[2-(acetylamino)-2-deoxy-.beta.-D-glucopyranosyl]-2-deoxy- (9CI) (CA INDEX NAME)

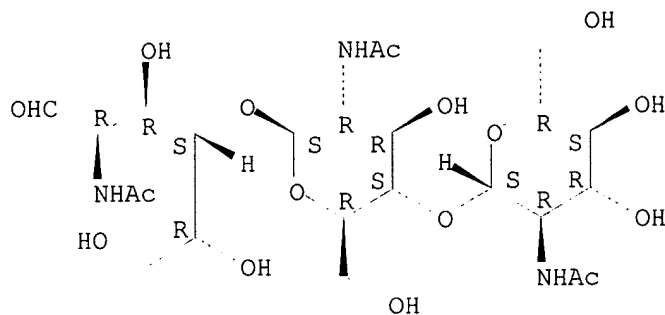
Absolute stereochemistry.



RN 38864-21-0 HCAPLUS

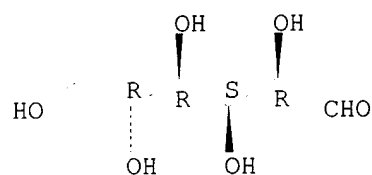
CN D-Glucose, O-2-(acetylamino)-2-deoxy-.beta.-D-glucopyranosyl-(1.fwdarw.4)-
O-2-(acetylamino)-2-deoxy-.beta.-D-glucopyranosyl-(1.fwdarw.4)-2-
(acetylamino)-2-deoxy- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



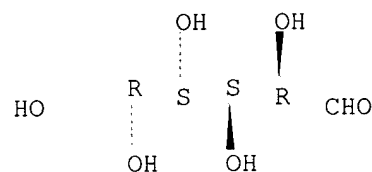
IT 50-99-7, biological studies 59-23-4, biological studies
 1811-31-0 7512-17-6 27939-30-6
 RL: BIOL (Biological study)
 (of wheat nucellar epidermis, **lectin** binding of)
 RN 50-99-7 HCAPLUS
 CN D-Glucose (8CI, 9CI) (CA INDEX NAME)

Absolute stereochemistry.



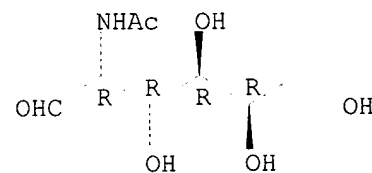
RN 59-23-4 HCAPLUS
 CN D-Galactose (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



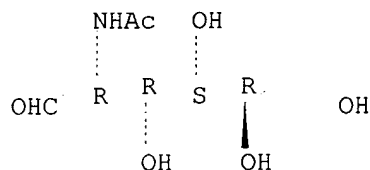
RN 1811-31-0 HCAPLUS
 CN D-Galactose, 2-(acetamino)-2-deoxy- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 7512-17-6 HCAPLUS
 CN D-Glucose, 2-(acetamino)-2-deoxy- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 27939-30-6 HCAPLUS

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FILE LAST UPDATED: 14 FEB 2003 <20030214/UP>
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L85 ANSWER 1 OF 4 WPIX (C) 2003 THOMSON DERWENT

AN 2001-565611 [63] WPIX

DNN N2001-421087 DNC C2001-167935

TI Detecting **chitinous** material in a processed non-
chitinous biological sample, involves contacting sample with
lectin probe that binds **chitin**, in the presence of
pectinase and detecting binding of **lectin** to
chitin.

DC B04 C06 C07 D13 D16 S03

IN COHEN, B A; PAYNE, J J; POTTS, S J; SLAUGHTER, D C; THOMPSON, J F; KOHN, B
 A

PA (REGC) UNIV CALIFORNIA; (COHE-I) COHEN B A; (PAYN-I) PAYNE J J; (POTT-I)
 POTTS S J; (SLAU-I) SLAUGHTER D C; (THOM-I) THOMPSON J F

CYC 96

PI WO 2001067102 A2 20010913 (200163)* EN 49p G01N033-53 <--

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AU 2001041938 A 20010917 (200204) G01N033-53 <--

US 2002107179 A1 20020808 (200254) A61K038-16

EP 1261872 A2 20021204 (200280) EN G01N033-53 <--

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
 RO SE SI TR

ADT WO 2001067102 A2 WO 2001-US6774 20010302; AU 2001041938 A AU 2001-41938
 20010302; US 2002107179 A1 CIP of US 2000-519533 20000306, US 2001-759815
 20010110; EP 1261872 A2 EP 2001-913259 20010302, WO 2001-US6774 20010302

FDT AU 2001041938 A Based on WO 200167102; EP 1261872 A2 Based on WO 200167102

PRAI US 2001-759815 20010110; US 2000-519533 20000306

IC ICM A61K038-16; G01N033-53

ICS C07K014-42; C12Q001-34; G01N021-64; G01N033-569

AB WO 200167102 A UPAB: 20011031

NOVELTY - Detecting **chitinous** material in processed non-**chitinous** biological sample (NCS) involves contacting NCS with **lectin** probe (I) which binds **chitin** (C), contacting NCS with a **pectinase**, and detecting binding of (I) to (C), NCS involves contacting NCS with fluorescently labeled (I) in solution at pH of 7-9 and detecting binding of (I) to (C), where binding in both cases indicates presence of (C) in NCS.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a kit for detecting **chitinous** material in NCS comprises a first container containing **chitinous** material, and a second container containing **pectinase**;

(2) detecting (M1) fluorochrome bound to one phase of a two-phase mixture involves contacting a transparent surface of a receptacle with a solid or semi-solid phase of the two phase mixture, illuminating the solid or semi-solid phase of the two mixture through the transparent surface and detecting through the transparent surface a fluorochrome bound to the solid or semi-solid phase of the two-phase mixture;

(3) a surface-reading fluorometer comprising a receptacle having a transparent surface, the receptacle being compatible with centrifugation in a centrifuge, a light source for illuminating a sample through the transparent surface and a detector disposed to detect fluorescence through the transparent surface; and

(4) a biological sample (II) in which a **lectin** that specifically binds (C), is bound to a **chitinous** contaminant of the sample, where the **lectin** is labeled with a label that provides the signal distinguishable from a background signal, and indicates the presence or quantity of **chitinous** contaminant in the biological sample.

USE - Detecting **chitinous** material in processed and unprocessed biological sample such as an agricultural product such as a fruit e.g., tomato, pepper, grape, orange, apple, lemon or berry, vegetable, grain, forage, silage, juice, wood, flower or seed; wood product; a textile or an animal tissue product, by detecting binding of a **lectin** probe to (C) which comprises an insect, insect part, or any animal of the phylum Arthropoda, subphylum Crustacea. Alternately, the method involves detecting (C) which is a component of a microorganism such as fungus (of phylum Ascomycota, Basidiomycota, Chytridiomycota, zygomycota or a member of phylum Oomycota in the Stramenopila kingdom), mold or yeast. Preferably, the method detects **chitinous** material of a fungus such as Cladosporium spp., Fusarium spp., Stemphylium spp., Alternaria spp., Geotrichum spp., Rhizopus spp., Botrytis spp., Phytophthora spp., or Pythium spp.. The **chitinous** material is detected in a processed biological sample which is a sample that has been

subjected to comminuting, homogenizing, heating, evaporation, lyophilization, filtering, concentrating, filtering, fermenting, freezing or blanching (claimed). The methods are useful in commercial applications, particularly in food and agriculture industry.

ADVANTAGE - The methods are accurate, highly reproducible, and relatively inexpensive. The method show high reliability and high reproducibility and are well suited to mass screening. By using labeled **lectins**, the signal-to-noise ratio can be dramatically increased by contacting the sample with **pectinase**. The improvement in the signal-to-noise ratio results in an economical, commercially viable, reliable assay. The results can be obtained without multiple washing steps usually employed in an assay.

Dwg.0/8

FS CPI EPI

FA AB; DCN

MC CPI: B04-A08D; **B04-C02E3**; **B04-L05C**; B06-F03; B10-A07;
B11-C07B3; B12-K04; C04-A08D; **C04-C02E3**; **C04-L05C**
; C06-F03; C10-A07; C11-C07B3; C12-K04; D03-A04; D03-H02; D03-K04;
D05-A02C; D05-H05; D05-H09
EPI: S03-E04D; S03-E14H4

TECH UPTX: 20011031

TECHNOLOGY FOCUS - BIOTECHNOLOGY - Preferred Method: Detecting **chitinous** material in a processed NCS such as a fruit, vegetable, a fruit or vegetable juice that has been processed by comminuting, homogenizing, heating, evaporation, lyophilization, filtering, concentrating, filtering, fermenting, freezing or blanching involves contacting the sample with a **lectin** such as wheat germ agglutinin (WGA), succinylated WGA, pokeweed **lectin**, tomato **lectin**, potato **lectin**, barley **lectin**, rice **lectin**, stinging nettle **lectin**, a vicilin, a chitovibrin, Vibrio **lectin**, or a hevein; contacting the sample with **polygalacturonase**, **pectinesterase**, **pectin lyase** or **hemicellulase** and detecting binding of **lectin** to (C) by detecting a signal from fluorescent label labeling the **lectin**. The method is performed at a pH greater than 7.0 and preferably at a pH of 8.0. Detecting **chitinous** material in unprocessed NCS preferably involves contacting a NCS such as fruit, vegetable, or fruit or vegetable juice with a fluorescently labeled (I) and detecting binding of **lectin** as described above to (C), by detecting a signal from the fluorescent label which labels the **lectin**. The method further involves contacting the biological sample with a **pectinase** as mentioned above. Detecting **chitinous** material in both processed and unprocessed NCS further involves contacting NCS with a blocking reagent such as serum albumin. Detecting **lectin** bound to (C) involves filtering the sample and eluting bound **lectin**. The eluting process involves contacting the **lectin** with (C), a (C) degradation product such as N-acetyl D-glucosamine or a (C) analogue. **Lectin** used in the processes is labeled with a detectable label such as radioactive label, magnetic label, colorimetric label, an enzymatic label, (preferably) a fluorescent label, metal, antibody, biotin, avidin or streptavidin and the detection process thus involves use of a fluorometer to detect the presence of the label. Most preferably the detection process involves filtering the sample, washing the filter to remove unbound (C), eluting bound **lectin** with a (C), a (C) degradation product or a (C) analogue, and detecting the eluted **lectin** with the fluorometer that uses a bandpass filter and is a surface reading fluorometer. In (M1), the receptacle is a centrifuge or a flow-through centrifuge. The contacting step involves spinning the receptacle so that the solid or semi-solid phase is deposited against the transparent surface. The two-phase mixture comprises a biological sample and the fluorochrome employed in the process is a (C)-specific fluorescently labeled **lectin**. Preferred Kit: The first and the second containers of the kit are the

same. The kit further comprises a label as described above for labeling the **lectin**, a transparent centrifugable receptacle for use with a surface reading flurometer and a bandpass filter for passing light emitted by a fluorescent label in the kit.

Preferred Sample: (II) is a processed sample with its pH ranging from 7-9 (basic) and is an agricultural product such as a fruit e.g., tomato, pepper, grape, orange, apple, lemon or berry, vegetable, grain, forage, silage, juice, wood, flower or seed. The sample further comprises an exogenously supplied **pectinase**.

ABEX

EXAMPLE - Ripe, defect free processing tomatoes were washed and surface disinfected. Cultures of *Alternaria alternata*, *Cladosporium herbarum*, *Fusarium oxysporum* and *Stemphylium botryosum*, were grown to 21 days. Each fruit was pricked and inoculated with one of four fungal pathogens. The fruit were placed into an incubator and maintained until the fungi spoiled approximately 2 % by mass of the tomato tissue. The spoiled volume was cut from each fruit in a set and added to unspoiled tissue from additional ripe, defect free processing tomatoes to obtain 3.6 kg of juice containing 2% spoiled tissue (by mass). A separate set of 80 defect-free processing tomatoes were also comminuted for 40 seconds in the blender to obtain 3.6 kg of juice containing no spoiled tissue. The tomato juice with 2% spoiled tissue and the juice with no spoiled tissue were filtered and combined proportionally to obtain five juice samples with spoiled tissue dilution levels of 0.0%, 0.25%, 0.5%, 1.0% and 2.0% (by mass). Each dilution level was sub-divided into 40 ml replicate sub-samples, placed into sealable tubes, autoclaved and then stored at 8 degrees C for up to three weeks. Howard mold count (HMC) procedure was carried out for the five spoiled tissue dilution levels for each of the four fungal species. The HMC scores for the juice samples was 0-100% for all mold species except *C. herbarum* which had a maximum HMC of 96%. The average amount of mold for each species was 0.75% spoiled tissue by mass. The average HMC scores for each species however, ranged from a low of 37.4% for *C. herbarum* to a high of 64.2% for *A. alternate*. The HMC results were non-linear with spoiled tissue dilution level. Considerable variability, particularly at the intermediate spoiled tissue levels, was observed between the HMC scores obtained by the different quality control laboratories (QCL). The overall average coefficient of variation (CV) between the average HMC scores of all four quality control laboratories was 35%. Another set of 60 juice samples was used in the **lectin** assay. Ten ml of juice was centrifuged and supernatant were removed. Highly reactive non-specific binding sites were blocked and 50 microl of 1 mg/ml Fluorescein isothiocyanate (FITC) labeled wheat germ agglutinin (WGA) **lectin** was added. The tube was shaken, **lectin** buffer (40 ml) was added, and centrifuged. The supernatant was removed, leaving the cells pelleted. The centrifuging and washing step was repeated once. The washed cells were subjected to fluorometer measurement to quantify the presence of FITC labeled **lectin**. The precision of the **lectin** assay and of the HMC assay were evaluated. In contrast to the HMC assay, the **lectin** assay results were linear with spoiled tissue dilution level. Because the HMC was by nature non-linear with high variability, a linearized HMC score was developed to compare with the **lectin** assay. The HMC scores of the two quality control laboratories which had the best precision among blind replicate measurements and the highest correlation between laboratories were averaged and used as the true Howard mold count for mold levels in the study. Four mold levels for *C. herbarum* and three mold levels for the remaining fungal species were regressed against the spoiled volume to develop linearized HMC models for each species. These models were then used to predict linearized HMC scores above the linear range for each species. The linearized HMC scores were then regressed against the **lectin** assay readings. The results show that the **lectin** assay gave generally comparable results to HMC in the linear range for each fungal organism.

L85 ANSWER 2 OF 4 WPIX (C) 2003 THOMSON DERWENT
 AN 1992-366390 [44] WPIX
 DNC C1992-162747
 TI Determn. of **chitin** or presence of **chitin**-contg.
 organism - using **chitin**-binding enzyme e.g. **chitinase**
 or lysozyme, and detecting any bound enzyme, e.g. for detection of fungi,
 yeast etc. in human biological fluid.
 DC B04 C07 D13 D15 D16
 IN DOUSMAN, L; TUSE, D
 PA (STRI) SRI INT
 CYC 16
 PI WO 9217786 A1 19921015 (199244)* EN 33p G01N033-569
 RW: AT BE CH DE DK ES FR GB GR IT LU MC NL SE
 W: CA JP
 EP 532737 A1 19930324 (199312) EN 33p G01N033-569
 R: DE FR GB IT NL
 JP 05508078 W 19931118 (199351) 9p C12Q001-34 <--
 ADT WO 9217786 A1 WO 1992-US2593 19920330; EP 532737 A1 EP 1992-909933
 19920330, WO 1992-US2593 19920330; JP 05508078 W JP 1992-509092 19920330,
 WO 1992-US2593 19920330
 FDT EP 532737 A1 Based on WO 9217786; JP 05508078 W Based on WO 9217786
 PRAI US 1991-678134 19910401
 REP 4.Jnl.Ref; EP 181851; US 3940317; US 5004699
 IC ICM **C12Q001-34**; G01N033-569
 ICS **G01N033-53**; G01N033-543; G01N033-573
 AB WO 9217786 A UPAB: 19931116
 Determn. of the presence of **chitin** in a sample comprises:
 attaching the sample to a substrate, contacting the attached sample with
 an enzyme which binds **chitin**; and detecting any bound enzyme.
 Also claimed are a method for determining the presence of
chitin-contg. organisms in a sample using **chitinase** or
 lysozyme as the **chitin**-binding enzyme; **chitin**
 -detection assay kits; a method for determining the presence of
chitin on the surface of a plant; and a conjugate comprising
chitinase bound to the signal-generating enzyme.
 USE/ADVANTAGE - Detection of **chitin**-contg. organisms, e.g.
 fungi, yeast and insects in a sample e.g. human biological fluid, plants,
 water and food. Antibodies which also bind to non-fungal carbohydrates
 other than **chitin** are not used, the fungal contaminants do not
 need to be directly cultured and do not require classical staining and
 detection does not require microscopy
 Dwg.0/7
 FS CPI
 FA AB; DCN
 MC CPI: B04-A07D5; C04-A07D5; B04-B02B2; C04-B02B2; **B04-B02C3**;
C04-B02C3; B04-B04A3; C04-B04A3; B04-B04B; C04-B04B;
 B04-B04C6; C04-B04C6; B04-B04D5; C04-B04D5; B04-B04E; C04-B04E;
 B04-B04H; C04-B04H; B04-B04L; C04-B04L; B04-B04M; C04-B04M;
B04-C02E3; **C04-C02E3**; B04-C03; C04-C03; B11-C07B1;
 C11-C07B1; B12-K04; C12-K04; D05-H09; D05-H11

L85 ANSWER 3 OF 4 WPIX (C) 2003 THOMSON DERWENT
 AN 1991-117008 [16] WPIX
 DNN **N1991-090104** DNC **C1991-050344**
 TI Detecting **chitin**-contg. organisms, esp. fungi and yeast - by
 attaching a sample to a solid phase, contacting with anti-**chitin**
 antibodies and detecting the antibodies.
 DC A89 B04 C03 D16 S03
 IN WINTERS, M A
 PA (STRI) SRI INT
 CYC 1
 PI US 5004699 A 19910402 (199116)*
 ADT US 5004699 A US 1989-426538 19891024

PRAI US 1987-123389 19871120; US 1989-426538 19891024

IC C12Q001-04; G01N033-53

AB US 5004699 A UPAB: 19930928

A determination of the presence of **chitin**-contg. organisms in a sample is claimed and comprises (a) attaching a sample contg. a fluid and non-fluid component and suspected of contg. **chitin**-contg. organisms onto a solid phase, (b) contacting the sample attached to the solid phase with a compsn. of anti-**chitin** antibodies which selectively bind **chitin** and (c) detecting the antibodies bound to **chitin** present in the sample whereby the presence of **chitin**-contg. organisms is detd. The solid phase can be formed from e.g. nylon, cellulose, plastics, or glass. The sample may be fixed to the solid phase using e.g. formalin, acetone, ethanol, or acetic acid. The antibodies may be labelled with e.g. enzymes, fluorescent agents or radionuclides. Alternatively, the antibodies may be bound to biotin and avidin reactive with the biotin is labelled so as to be capable of detection. In place of the antibodies there may be used a **lectin** which selectively binds **chitin**.

USE/ADVANTAGE - The method allows the rapid detection of a variety of fungi and yeast without requiring culturing or staining of the organisms. The method can be used for detecting infection caused by fungi and yeast in animals and plants, e.g. Trichophyton metangrophytes which causes ringworm. It can also be used for detecting organisms which contaminate water and food.

0/4

FS CPI EPI

FA AB; DCN

MC CPI: A03-A; A09-B; B04-B02B2; B04-B04C6; B04-C02E3; B11-C07A;

B12-K04A4; C04-B02B2; C04-B04C6; C04-C02E3; C11-C07A;

C12-K04A4; D05-H07; D05-H09; D05-H13

EPI: S03-E14H4

L85 ANSWER 4 OF 4 WPIX (C) 2003 THOMSON DERWENT

AN 1989-201992 [28] WPIX

DNN N1989-154219 DNC C1989-089519

TI Novel **lectin** for detecting specific sugar chain - obtd. from basidiocarp of Mujinatake.

DC B04 D16 S03

PA (NCHK) NICHIREI KK

CYC 1

PI JP 01139599 A 19890601 (198928)* 6p

JP 2630431 B2 19970716 (199733) 5p C07K014-37

ADT JP 01139599 A JP 1988-151136 19880621; JP 2630431 B2 JP 1988-151136 19880621

FDT JP 2630431 B2 Previous Publ. JP 01139599

PRAI JP 1987-211372 19870827; JP 1988-151136 19880621

IC C07K003-02; C07K015-10; C08B037-00; C12P019-00; G01N033-58

ICM C07K014-37

ICS C07K001-22; C07K001-34; C07K003-02; C07K015-10; C12P019-00; G01N033-58

ICA C08B037-00; G01N033-566

AB JP 01139599 A UPAB: 19930923

Novel **lectin** and its analogues which are present in basidiocarp of Mujinatake, is a monomer of ca. 40000 dalton, has 4 combining group of Ko = 6400 per mol affinity constant, contain no amino acid, more than 4 in isoelectric point, has the reactivity of GlcNAc greater than (GlcNAc)₂ at least (GlcNAc)₃, GlcNAc β 1-6, GlcNAc β 12 greater than GlcNAc β 1-4, R1 to 6GlcNAc greater than R1 to 3GlcNAc, R1-4GlcNAc (where R is sugar other than GlcNAc), and has the following amino acid compositions: Asx 13.7, The 7.6, Ser 4.9, Glx 6.7, Pro 4.3, Gly 11.6, Ala 7.6, Cys 0.7, Val 6.3, Met 1.0, Ile 5.1, Leu 7.4, Tyr 2.9, Phe 6.5, His 2.1, Lys 4.5, Trp 0.4, Arg 6.7 (where Asx is Asn and Asp, Glx is Gln and Glu).

A method for producing **lectin** comprising extracting

basidiocarpaddocarp of MukMujinatakenatake with liquid medium, injecting the extracts to affinity chromatography utilizing **chitin** or N-acetylated **chitin**, eluting by GlcNAc, and filtering the eluate in the presence of dihydric or trihydric alcohol is also claimed.

USE/ADVANTAGE - The **lectin** labelled with appropriate markers such as enzymes, biotin or fluorescent dye is useful as clinical agent for detecting specific sugar chain construction having GlcNAc.

0/0

FS CPI EPI

FA AB

MC CPI: B04-B02C; B04-B04A4; B04-C02; B06-F03; B12-K04; D05-C12; D05-H09

EPI: S03-E14H

=> fil biosis

FILE 'BIOSIS' ENTERED AT 14:18:03 ON 16 FEB 2003

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FILE COVERS 1969 TO DATE.

CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 12 February 2003 (20030212/ED)

=> d all

L97 ANSWER 1 OF 1 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.

AN 1983:287293 BIOSIS

DN BA76:44785

TI **LECTINS** AS CYTOCHEMICAL PROBES OF THE DEVELOPING WHEAT GRAIN 2.
REACTION OF WHEAT GERM **LECTIN** WITH THE NUCELLAR EPIDERMIS.

AU BALDO B A; BONIFACE P A; SIMMONDS D H

CS WHEAT RES. UNIT, CSIRO, NORTH RYDE, N.S.W. 2113.

SO AUST J PLANT PHYSIOL, (1982 (RECD 1983)) 9 (6), 663-676.

CODEN: AJPPCH. ISSN: 0310-7841.

FS BA; OLD

LA English

AB Fluorescein-labeled wheat-germ **lectin**, which has a specific binding affinity for N-acetyl-D-**glucosamine**, reacts specifically with nucellar epidermal cell walls in the frozen and JB-4-embedded sections of developing wheat grain. The reaction was completely inhibited by preincubation of the **lectin** with diacetylchitobiose or triacetylchitotriose, 2 sugars known to be good inhibitors of the wheat-germ **lectin** combining sites. Labeled **lectins** with different specificities, and labeled non-**lectin** proteins such as bovine serum albumin, failed to react. Reaction with the nucellar epidermis increased to a maximum at .apprx. 14 days post anthesis (p.a.) and then progressively declined. At 35 days p.a., clear fluorescence was visible only in the inner crease area. Labeled wheat-germ **lectin** did not stain the nucellar projection at any stage of the developmental period studied. Treatment of wheat grain sections with chitinase almost completely abolished reactivity between nucellar epidermal cell walls and the **lectin**. Reactivity was slightly diminished following treatment with cellulase, but **hemicellulase** and 2 preparations of .beta.-N-acetyl-D-**glucosaminidase** had no effect. The probable presence of a **chitin**-like structure was indicated in nucellar epidermal cell walls, which may be an endogenous saccharide receptor for wheat-germ **lectin** in developing or germinating wheat grains. .

CC Microscopy Techniques - Cytology and Cytochemistry 01054

Biochemical Methods - Proteins, Peptides and Amino Acids *10054

Biochemical Methods - Carbohydrates *10058

Biochemical Studies - Proteins, Peptides and Amino Acids *10064

Biochemical Studies - Carbohydrates *10068
 Enzymes - Physiological Studies *10808
 Plant Physiology, Biochemistry and Biophysics - Reproduction *51512
 Plant Physiology, Biochemistry and Biophysics - Enzymes *51518
 Plant Physiology, Biochemistry and Biophysics - Chemical Constituents *51522
 Agronomy - Grain Crops 52504
 BC Gramineae 25305
 Bovidae 85715
 IT Miscellaneous Descriptors
 CELLULASE CHITINASE BETA-N ACETYL-D GLUCOSAMINIDASE
 HEMI CELLULASE BOVINE SERUM ALBUMIN DI ACETYL
 CHITOBIOSE TRI ACETYL CHITOBIOSE
 RN 9001-06-3 (CHITINASE)
 9012-33-3 (BETA-N ACETYL-D GLUCOSAMINIDASE)
 9012-54-8 (CELLULASE)
 9025-56-3 (HEMI CELLULASE)

=> fil medline

FILE 'MEDLINE' ENTERED AT 14:32:09 ON 16 FEB 2003

FILE LAST UPDATED: 15 FEB 2003 (20030215/UP). FILE COVERS 1958 TO DATE.

On June 9, 2002, MEDLINE was reloaded. See HELP RLOAD for details.

MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the MeSH 2003 vocabulary. See <http://www.nlm.nih.gov/mesh/summ2003.html> for a description on changes.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d all tot

L131 ANSWER 1 OF 9 MEDLINE
 AN 2002279491 MEDLINE
 DN 22013658 PubMed ID: 12018950
 TI A nonradioactive, high throughput assay for chitin synthase activity.
 AU Lucero Hector A; Kuranda Michael J; Bulik Dorota A
 CS Department of Molecular and Cell Biology, Goldman School of Dental Medicine, Boston University Medical Center, Boston, MA 02118, USA.. hlucero@bu.edu
 NC AI 44070 (NIAID)
 GM 31318 (NIGMS)
 SO ANALYTICAL BIOCHEMISTRY, (2002 Jun 1) 305 (1) 97-105.
 Journal code: 0370535. ISSN: 0003-2697.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 EM 200210
 ED Entered STN: 20020522
 Last Updated on STN: 20021218
 Entered Medline: 20021018
 AB Wheat germ **agglutinin** (WGA) binds with high affinity and specificity to several sites on **chitin** polymers. Based on these properties we have modified and adapted a previously patented (U.S. patent 5,888,757) nonradioactive, high throughput screening assay for antimicrobial agents, making it suitable as a quantitative enzymatic assay for the activity of individual **chitin** synthase isozymes in yeast. The procedure involves binding of synthesized **chitin** to a

WGA-coated surface followed by detection of the polymer with a horseradish peroxidase-WGA conjugate. Horseradish peroxidase activity is then determined as an increment in absorbance at 600 nm. Absorbance values are converted to amounts of **chitin** using acid-solubilized **chitin** as a standard. The high sensitivity (lower limit of detection about 50 ng **chitin**), low dispersion (lower than 10%), and high throughput (96-well microtiter plate format) make this assay an excellent substitute for the conventional radioactive **chitin** synthase assay in cell-free extracts. We have applied this method to the differential assay of **chitin** synthase activities (Chs1, Chs2, and Chs3) in cell-free extracts of *Saccharomyces cerevisiae*. Analysis of Chs3 activity in chitosomal and plasma membrane fractions revealed that Chs3 in the plasma membrane fraction is about sixfold more active than in the chitosome.

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CT Check Tags: Support, U.S. Gov't, P.H.S.

Cell Membrane: EN, enzymology

Cell Membrane: ME, metabolism

Chitin: BI, biosynthesis

Chitin: ME, metabolism

Chitin Synthase: GE, genetics

***Chitin Synthase: ME, metabolism**

Cobalt: PD, pharmacology

Colorimetry

Dithiothreitol: PD, pharmacology

Horseradish Peroxidase: ME, metabolism

Isoenzymes: GE, genetics

Isoenzymes: ME, metabolism

Kinetics

Mutation: GE, genetics

Nickel: PD, pharmacology

Plant Lectins

***Saccharomyces cerevisiae: EN, enzymology**

Saccharomyces cerevisiae: GE, genetics

Sensitivity and Specificity

Sodium Dodecyl Sulfate

Soybeans

Uridine Diphosphate N-Acetylglucosamine: CH, chemistry

Wheat Germ Agglutinins: ME, metabolism

RN 1398-61-4 (**Chitin**); 151-21-3 (Sodium Dodecyl Sulfate); 3483-12-3 (Dithiothreitol); 528-04-1 (**Uridine Diphosphate N-**

Acetylglucosamine); 7440-02-0 (Nickel); 7440-48-4 (Cobalt)

CN 0 (Isoenzymes); 0 (Plant **Lectins**); 0 (Wheat Germ

Agglutinins); EC 1.11.1.- (Horseradish Peroxidase); EC 2.4.1.16 (**Chitin Synthase**)

L131 ANSWER 2 OF 9 MEDLINE

AN 97388261 MEDLINE

DN 97388261 PubMed ID: 9247095

TI Mosquito midgut glycoproteins and recognition sites for malaria parasites.

AU Ramasamy R; Wanniarachchi I C; Srikrishnaraj K A; Ramasamy M S

CS Molecular Biology and Entomology Laboratories, Division of Life Sciences, Institute of Fundamental Studies, Kandy, Sri Lanka.. ranjan@ifs.ac.lk

SO BIOCHIMICA ET BIOPHYSICA ACTA, (1997 Jul 10) 1361 (1) 114-22.

Journal code: 0217513. ISSN: 0006-3002.

CY Netherlands

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199708

ED Entered STN: 19970908

Last Updated on STN: 19970908

Entered Medline: 19970822

AB Midgut glycoproteins of the malaria vector *Anopheles tessellatus* were partially characterised by gel electrophoresis and **lectin** binding. Specific binding to wheat germ **agglutinin** (WGA) and Concanavalin A (Con A) indicated the presence of N-linked core oligosaccharides in many proteins. Rabbit antibodies were produced against wheat germ **agglutinin** binding proteins (WGABP). These antibodies also recognised distinct proteins in the peritrophic membrane which is secreted into the midgut to enclose a bloodmeal. Rabbit anti-WGABP antibodies ingested in a bloodmeal containing infective gametocytes of the human malaria parasites *Plasmodium falciparum* and *P. vivax* tended to reduce infectivity of the parasites to vector mosquitoes. Chitotriose added to a bloodmeal also inhibited parasite development in the mosquito. The results are consistent with a hypothesis that N-acetyl **glucosamine** residues in mosquito midgut glycoproteins and/or midgut **chitin** and proteoglycan function as recognition sites for malaria parasites.

CT Check Tags: Animal; Support, Non-U.S. Gov't
Antibodies: IM, immunology
Binding Sites

*Culicidae: CH, chemistry

Culicidae: PS, parasitology

*Glycoproteins: AN, analysis

Glycoproteins: IM, immunology

Malaria, Falciparum: PS, parasitology

Oligosaccharides

*Plasmodium falciparum: CH, chemistry

Virulence: IM, immunology

Wheat Germ Agglutinins: IM, immunology

CN 0 (Antibodies); 0 (Glycoproteins); 0 (Oligosaccharides); 0 (Wheat Germ Agglutinins)

L131 ANSWER 3 OF 9 MEDLINE

AN 93388528 MEDLINE

DN 93388528 PubMed ID: 8376342

TI Evasion of host defense by in vivo-produced protoplast-like cells of the insect mycopathogen *Beauveria bassiana*.

AU Pendland J C; Hung S Y; Boucias D G

CS Department of Entomology and Nematology, University of Florida, Gainesville 32611-0620.

SO JOURNAL OF BACTERIOLOGY, (1993 Sep) 175 (18) 5962-9.

Journal code: 2985120R. ISSN: 0021-9193.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199310

ED Entered STN: 19931105

Last Updated on STN: 19990129

Entered Medline: 19931018

AB In vivo cells (hyphal bodies) of the hyphomycetous insect pathogen *Beauveria bassiana* collected from host *Spodoptera exigua* larval hemolymph were osmotically sensitive and lacked a well-defined cell wall. In light and electron microscope studies, a galactose-specific **lectin** purified from *S. exigua* hemolymph, concanavalin A (specific for alpha-mannose), and a polyclonal antibody to *B. bassiana* cell walls all bound to surfaces of in vitro-produced *B. bassiana* blastospores; however, none of these probes labelled the thin layer of extracellular material covering the plasma membranes of hyphal bodies. These cells were observed freely circulating in *S. exigua* hemolymph at 36 h postinfection, although immunocompetent hemocytes were known to be present. Additionally, association of hyphal bodies with hemocytes in monolayers was significantly less than for opsonized in vitro blastospores or submerged conidia. The absence of antigenically important galactomannan components

on in vivo cells may therefore allow these cells to escape recognition and phagocytosis. Lack of structural components (e.g., **chitin**, as evidenced by the absence of binding of wheat germ **agglutinin**) may also be important with respect to evasion of host cellular defense mechanisms. Production of wall material resumed 48 to 60 h postinfection and therefore may coincide with loss of phagocytic capabilities of the hemocytes due to immunosuppressive effects of fungal metabolites. The protoplast-like cells may be formed by the action of hydrolytic enzymes in the hemocytes or by inhibition of fungal cell wall synthetases.

CT Check Tags: Animal; Support, U.S. Gov't, Non-P.H.S.

Microscopy, Electron

*Mitosporic Fungi: IM, immunology

Mitosporic Fungi: PY, pathogenicity

Mitosporic Fungi: UL, ultrastructure

Moths: IM, immunology

*Moths: MI, microbiology

Moths: UL, ultrastructure

Protoplasts: IM, immunology

L131 ANSWER 4 OF 9 MEDLINE

AN 93160527 MEDLINE

DN 93160527 PubMed ID: 8431598

TI Chitin synthesis and degradation as targets for pesticide action.

AU Cohen E

CS Department of Entomology, Faculty of Agriculture, Hebrew University of Jerusalem, Rehovot, Israel.

SO ARCHIVES OF INSECT BIOCHEMISTRY AND PHYSIOLOGY, (1993) 22 (1-2) 245-61. Ref: 105

Journal code: 8501752. ISSN: 0739-4462.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

General Review; (REVIEW)

(REVIEW, ACADEMIC)

LA English

FS Priority Journals

EM 199303

ED Entered STN: 19930402

Last Updated on STN: 19930402

Entered Medline: 19930318

AB Various pesticides are being used to destabilize, perturb, or inhibit crucial biochemical and physiological targets related to metabolism, growth, development, nervous communication, or behavior in pestiferous organisms. **Chitin** is an eukaryotic extracellular aminosugar biopolymer, massively produced by most fungal systems and by invertebrates, notably arthropods. Being an integral supportive component in fungal cell wall, insect cuticle, and nematode egg shell, **chitin** has been considered as a selective target for pesticide action. Throughout the elaborate processes of **chitin** formation and deposition, only the polymerization events associated with the cell membrane compartment are so far available for chemical interference. Currently, the actinomycetes-derived nucleoside peptide fungicides such as the polyoxins and the insecticidal benzoylaryl ureas have reached commercial pesticide status. The polyoxins and other structurally-related antibiotics like nikkomycins are strong competitive inhibitors of the polymerizing enzyme **chitin** synthase. The exact biochemical lesion inflicted by the benzoylaryl ureas is still elusive, but a post-polymerization event, such as translocation of **chitin** chains across the cell membrane, is suggested. Hydrolytic degradation of the **chitin** polymer is essential for hyphal growth, branching, and septum formation in fungal systems as well as for the normal molting of arthropods. Recently, insect chitinase activity was strongly and specifically suppressed by allosamidin, an actinomycetes-derived

metabolite. In part, the defense mechanism in plants against invasion of pathogens is associated with induced chitinases. **Chitin**, chitosan, and their oligomers are able to act as elicitors which induce enhanced levels of chitinases in various plants. **Lectins** which bind to N-acetyl-D-glucosamine strongly interfere with fungal and insect **chitin** synthases. Plant **lectins** with similar properties may be involved in plant-pathogen interaction *inter alia* by suppressing fungal invasion.

CT Check Tags: Animal
 Arthropods: DE, drug effects
 *Arthropods: ME, metabolism
 Carbohydrate Sequence
 Chitin: BI, biosynthesis
 *Chitin: ME, metabolism
 Molecular Sequence Data
 *Pesticides: PD, pharmacology
 RN 1398-61-4 (Chitin)
 CN 0 (Pesticides)

L131 ANSWER 5 OF 9 MEDLINE
 AN 91187880 MEDLINE
 DN 91187880 PubMed ID: 2011589
 TI Malaria parasite chitinase and penetration of the mosquito peritrophic membrane.
 AU Huber M; Cabib E; Miller L H
 CS Laboratory of Parasitic Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD 20892.
 SO PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (1991 Apr 1) 88 (7) 2807-10.
 Journal code: 7505876. ISSN: 0027-8424.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 EM 199105
 ED Entered STN: 19910526
 Last Updated on STN: 19910526
 Entered Medline: 19910506
 AB Malaria parasites (ookinetes) appear to digest the peritrophic membrane in the mosquito midgut during penetration. Previous studies demonstrated that **lectins** specific for N-acetylglucosamine bind to the peritrophic membrane and proposed that the membrane contains **chitin** [Rudin, W. & Hecker, H. (1989) Parasitol. Res. 75, 268-279]. In the present study, we show that the peritrophic membrane is digested by *Serratia marcescens* chitinase (EC 3.2.1.14), leading to the release of N-acetylglucosamine and fragmentation of the membrane. We also report the presence of a malaria parasite chitinase that digests 4-methylumbelliferyl chitotriose. The enzyme is not detectable until 15 hr after zygote formation, the time required for maturation of the parasite from a zygote to an ookinete, the invasive form of the parasite. At 20 hr, the enzyme begins to appear in the culture supernatant. The chitinase extracted from the parasite and found in the culture supernatant consists of a major band and two minor bands of activity on native polyacrylamide gel electrophoresis. The presence of **chitin** in the peritrophic membrane, the disruption of the peritrophic membrane during invasion, and the presence of chitinase in ookinetes suggest that the chitinase in ookinetes is used in the penetration of the peritrophic membrane.
 CT Check Tags: Animal
 *Aedes: PH, physiology
 Cell Membrane: PH, physiology
 Chickens
 Chitin: AN, analysis

Chitinase: IP, isolation & purification

*Chitinase: ME, metabolism

Fertilization

*Host-Parasite Relations

*Leukocytes: PS, parasitology

Plasmodium gallinaceum: EN, enzymology

*Plasmodium gallinaceum: PH, physiology

Substrate Specificity

RN 1398-61-4 (Chitin)

CN EC 3.2.1.14 (Chitinase)

L131 ANSWER 6 OF 9 MEDLINE

AN 86223356 MEDLINE

DN 86223356 PubMed ID: 3754855

TI Electron microscopic localization of **chitin** using colloidal gold labelled with wheat germ **agglutinin**.

AU Peters W; Latka I

SO HISTOCHEMISTRY, (1986) 84 (2) 155-60.

Journal code: 0411300. ISSN: 0301-5564.

CY GERMANY, WEST: Germany, Federal Republic of

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 198607

ED Entered STN: 19900321

Last Updated on STN: 19970203

Entered Medline: 19860701

AB The **lectin** wheat germ **agglutinin** (WGA) has a binding site which is able to bind a sequence of three N-acetyl-**glucosamine** residues. Therefore, it has a very strong affinity for the polymers of this sugar, especially **chitin**. Colloidal gold can be labelled with WGA and used as a specific electron-dense marker for the electron-microscopic localization of **chitin**. The specificity of the WGA-gold binding can be checked by competitive inhibition with 5-10 mM triacetyl chitotriose. The reliability of this method was tested in three species. In the formation zone of the radula of the snail, *Biomphalaria glabrata* Say, **chitin** or **chitin** precursors were localized in vesicles of the odontoblasts, outside the extremely long microvilli of odontoblasts and in the newly formed teeth. The inner peritrophic envelope of the earwig, *Forficula auricularia* L., is characterized by an orthogonal texture of bundles of microfibrils that are thought to contain **chitin**. The presence of **chitin** was proved using the present method. In the peritrophic membranes of the blowfly, *Calliphora erythrocephala* Meigen, it was possible to differentiate between **chitin** and glycoproteins which have N-**acetylglucosamine** residues.

CT Check Tags: Animal

Biomphalaria

*Chitin: AN, analysis

Diptera

Gold

Histocytochemistry

Insects

Lectins

Microscopy, Electron

Wheat Germ Agglutinins

RN 1398-61-4 (Chitin); 7440-57-5 (Gold)

CN 0 (Lectins); 0 (Wheat Germ Agglutinins)

L131 ANSWER 7 OF 9 MEDLINE

AN 85287551 MEDLINE

DN 85287551 PubMed ID: 4030095

TI Identification of **chitin** as a structural component of *Giardia*

cysts.

AU Ward H D; Alroy J; Lev B I; Keusch G T; Pereira M E

SO INFECTION AND IMMUNITY, (1985 Sep) 49 (3) 629-34.

Journal code: 0246127. ISSN: 0019-9567.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 198510

ED Entered STN: 19900320

Last Updated on STN: 19900320

Entered Medline: 19851016

AB The intestinal parasite *Giardia lamblia* is a significant cause of diarrheal disease, which is perpetuated by the infective cyst form of the parasite. Although a rational approach to the control of giardiasis would be to inhibit cyst formation, nothing is known of the chemical composition of the cyst wall or of its biosynthesis. In these studies, we have shown that **chitin** is a major structural component of *G. lamblia* and *G. muris* cyst walls. This conclusion is based on the finding that chitinase specifically destroys the cyst wall, as revealed by electron microscopy. The presence of **chitin** was also shown directly by **lectin** binding studies. Of 12 **lectins** with diverse carbohydrate recognition specificity, only the N-acetylglucosamine-specific **lectins** wheat germ **agglutinin**, succinylated wheat germ **agglutinin**, and tomato **lectin** bound to cyst walls, as shown by fluorescence microscopy and cytochemistry. Wheat germ **agglutinin** binding was completely abolished by treatment of the cysts with purified chitinase. This effect was specific since it could be prevented by incubating the enzyme with **chitin** before treatment of the cysts. Treatment of cysts with N-acetyl-beta-glucosaminidase partially inhibited wheat germ **agglutinin** binding, whereas other glycosidases and proteases had no effect. These findings indicate that **chitin** is a major structural component of *Giardia* cyst walls and raise the possibility that inhibitors of **chitin** synthesis may be of use in preventing encystation and thus controlling spread of the disease.

CT Check Tags: Animal; Support, Non-U.S. Gov't

Acetylglucosamine: ME, metabolism

*Chitin: AN, analysis

Chitinase: PD, pharmacology

*Giardia: AN, analysis

Giardia: ME, metabolism

Mice

Receptors, Mitogen: AN, analysis

RN 1398-61-4 (Chitin); 7512-17-6 (Acetylglucosamine)

CN 0 (Receptors, Mitogen); EC 3.2.1.14 (Chitinase)

L131 ANSWER 8 OF 9 MEDLINE

AN 83127577 MEDLINE

DN 83127577 PubMed ID: 6818997

TI Purification of an N-acetyl-D-glucosamine specific **lectin** (P.B.A.) from epidermal cell membranes of *Pieris brassicae* L.

AU Mauchamp B

SO BIOCHIMIE, (1982 Nov-Dec) 64 (11-12) 1001-8.

Journal code: 1264604. ISSN: 0300-9084.

CY France

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 198304

ED Entered STN: 19900318

Last Updated on STN: 19900318

Entered Medline: 19830407

AB We report the isolation and the purification of an N-acetyl-D-**glucosamine** specific **lectin** capable of **agglutinating** either fixed trypsinized rabbit erythrocytes or **chitin** particles. An **agglutinin** assay based on the affinity of this **lectin** for the **chitin** was devised with fluorescent particles of scorpion cuticle to measure **lectin** activity during purification steps. **Lectin** was isolated from epidermal cell membranes; its molecular weight was determined by gel filtration and polyacrylamide electrophoresis in sodium dodecyl sulfate. Mr was estimated to be 43,000. **Lectin** could be constituted by two subunits. Mr of which was estimated to be 23,000. The specificity of this **lectin** against N-acetyl-D-**glucosamine** and its oligomers suggests a possible role in the dynamics of these saccharides during the cuticle cycle.

CT Check Tags: Animal

***Acetylglucosamine**: ME, metabolism

Agglutination Tests

***Butterflies**: AN, analysis

Cell Membrane: AN, analysis

Chromatography, Affinity

Epidermis: AN, analysis

***Glucosamine**: AA, analogs & derivatives

***Lectins**: IP, isolation & purification

***Lepidoptera**: AN, analysis

RN 3416-24-8 (**Glucosamine**); 7512-17-6 (**Acetylglucosamine**)

CN 0 (**Lectins**)

L131 ANSWER 9 OF 9 MEDLINE

AN 80018713 MEDLINE

DN 80018713 PubMed ID: 573586

TI **Chitin-binding hemagglutinin** produced by *Conidiobolus* strains.

AU Ishikawa F; Oishi K; Aida K

SO APPLIED AND ENVIRONMENTAL MICROBIOLOGY, (1979 Jun) 37 (6) 1110-2.

Journal code: 7605801. ISSN: 0099-2240.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 197911

ED Entered STN: 19900315

Last Updated on STN: 19990129

Entered Medline: 19791128

AB A hemagglutinin was produced by strains of *Conidiobolus* which also produce beta-N-**acetylglucosaminidase**. Activity of the hemagglutinin was inhibited by D-**glucosamine**, N-acetyl-D-**glucosamine**, D-mannosamine, and beta-N-acetyl-D-**glucosaminides** but not by D-glucose, D-mannose, and alpha-N-acetyl-D-**glucosaminides**.

CT **Acetylglucosaminidase**: BI, biosynthesis

Binding Sites, Antibody

Carbohydrates: PD, pharmacology

***Chitin**: IM, immunology

Chitinase: BI, biosynthesis

Hemagglutination Inhibition Tests

***Lectins**: IM, immunology

*Pest Control, Biological

Species Specificity

Zygomycota: EN, enzymology

***Zygomycota**: IM, immunology

RN 1398-61-4 (**Chitin**)

CN 0 (Binding Sites, Antibody); 0 (Carbohydrates); 0 (**Lectins**); EC

3.2.1.14 (**Chitinase**); EC 3.2.1.30 (**Acetylglucosaminidase**)

=> d his

(FILE 'HOME' ENTERED AT 13:30:45 ON 16 FEB 2003)
SET COST OFF

FILE 'REGISTRY' ENTERED AT 13:31:04 ON 16 FEB 2003
E N-ACETYL-D-GLUCOSAMINE/CN

L1 1 S E3
L2 302 S C8H15NO6/MF
L3 70 S L2 AND GLUCO?
L4 22 S L3 AND 2 ACETYLAMINO
L5 7 S L4 NOT (14C# OR 13C# OR 11C# OR C14# OR C13# OR C11# OR (D OR
L6 7 S L1,L5
E PECTINASE/CN
L7 1 S E3
E POLYGALACTURONASE/CN
L8 1 S E3
E PECTINESTERASE/CN
L9 1 S E3
E PECTIN LYASE/CN
L10 1 S E3
E HEMICELLULASE/CN
L11 1 S E3
L12 4 S L7-L11
L13 612 S (?GALACTURONASE? OR ?PECTINESTERASE? OR PECTIN LYASE OR ?HEMI
L14 608 S L13 NOT L12
L15 26 S L14 NOT SQL/FA
L16 15 S L15 AND 1/NC
L17 14 S L16 NOT FRAGMENT
L18 594 S L14 NOT L17

FILE 'HCAPLUS' ENTERED AT 13:36:21 ON 16 FEB 2003

FILE 'REGISTRY' ENTERED AT 13:36:25 ON 16 FEB 2003
E CHITIN/CN

L19 1 S E3

FILE 'HCAPLUS' ENTERED AT 13:36:33 ON 16 FEB 2003

L20 6385 S L19
L21 11703 S CHITIN
E CHITIN
L22 12050 S E3,E5,E6,E15,E17,E18,E25,E29,E30,E31,E43,E47,E51,E67,E69
L23 260 S E85,E95
L24 12133 S L20-L23
E LECTIN/CT
E E6+ALL
E E2+ALL
L25 19976 S E2,E3
E LECTIN
L26 33755 S E2,E3,E8,E9
L27 23926 S E38
L28 319 S L24 AND L25-L27
L29 7296 S L12
L30 5564 S L17
L31 243 S L18
L32 3 S L28 AND L29-L31
L33 9540 S ?PECTINASE? OR ?GALACTURONASE? OR ?PECTINESTERASE? OR ?PECTIN
L34 4 S L28 AND L33
L35 4 S L32,L34
L36 3 S L35 AND L6
L37 3 S L35 AND (N ACETYL D GLUCOSAMINE OR ?GLUCOSAMIN?)
L38 4 S L35-L37

L39 3 S L38 NOT TEXTILE/TI
 E POTTS S/AU
 L40 6 S E6,E12,E13
 E SLAUGHTER D/AU
 L41 26 S E3,E4,E13
 E THOMPSON J/AU
 L42 395 S E3,E20-E23
 E THOMPSON JAMES/AU
 L43 53 S E3,E23
 E THOMPSON JIM/AU
 L44 4 S E3
 L45 1 S E6
 E PAYNE J/AU
 L46 49 S E3,E21,E22
 E PAYNE JENNIFER/AU
 L47 8 S E3,E4
 L48 1 S E1
 E COHEN B/AU
 L49 80 S E3-E5
 L50 1 S E26
 L51 5 S L40-L50 AND L24
 L52 5 S L51 AND L25-L31
 L53 2 S L51 AND L33
 L54 2 S L51-L53 AND L39
 L55 3 S L39,L54
 L56 3 S L51-L53 NOT L55
 L57 6 S L54-L56 AND L20-L56
 SEL RN

FILE 'REGISTRY' ENTERED AT 13:48:04 ON 16 FEB 2003

L58 18 S E1-E18

FILE 'HCAPLUS' ENTERED AT 13:48:26 ON 16 FEB 2003

L59 6 S L58 AND L57

FILE 'HCAPLUS' ENTERED AT 13:48:52 ON 16 FEB 2003

FILE 'WPIX' ENTERED AT 13:54:30 ON 16 FEB 2003

E CHITIN
 L60 2677 S E2-E4,E9/BIX
 L61 48 S E21/BIX
 L62 53 S E28/BIX
 L63 2708 S L60-L62
 L64 1523 S (B04-C02E3 OR C04-C02E3)/MC
 L65 781 S (B04-C02F OR C04-C02F)/MC
 E CHITIN/DCN
 E E3+ALL
 L66 1090 S (R07813 OR R14547 OR R03233)/DCN
 L67 1303 S C08B037-08/IC, ICM, ICS
 L68 5454 S L60-L67
 L69 3048 S ?CHITIN?/BIX
 L70 2725 S L68 AND L69
 L71 5454 S L68,L70
 L72 323 S L69 NOT L71
 E LECTIN
 L73 1674 S LECTIN/BIX
 L74 81 S C07K014-42/IC, ICM, ICS, ICA, ICI
 E LECTIN/DCN
 L75 55 S L71,L72 AND L73,L74
 SEL DN AN 13 51 52
 L76 3 S L75 AND E1-E9
 L77 1 S L75 AND L33/BIX
 L78 48 S L71,L72 AND G01N033-53/IC, ICM, ICS

L79 19 S L78 AND C12Q/IC, ICM, ICS
 L80 2 S L78 AND C12Q001-34/IC, ICM, ICS
 L81 5 S L78 AND (D05-A02C OR B04-L05C OR C04-L05C OR B04-B02C3 OR C04
 L82 7 S L76, L77, L80, L81
 L83 5 S L82 NOT (CONJUGATE OR RHEUMATOID)/TI
 L84 5 S L83 AND L60-L83
 L85 4 S L84 NOT FIBRIN

FILE 'WPIX' ENTERED AT 14:13:32 ON 16 FEB 2003

FILE 'DPCI' ENTERED AT 14:13:44 ON 16 FEB 2003

E WO2001067102/PN
 E US2000-519533/AP, PRN
 E EP1261872/PN

FILE 'BIOSIS' ENTERED AT 14:15:14 ON 16 FEB 2003

L86 7239 S L24
 E CHITIN
 L87 6587 S E3, E5, E6, E7, E18, E19, E20, E21
 L88 8 S E25, E27
 L89 2 S E37
 L90 7250 S L86-L89
 L91 4116 S L12 OR L17
 L92 5213 S L33
 L93 16 S L18
 L94 19 S L90 AND L91-L93
 E LECTIN
 L95 1 S E1-E16 AND L94
 L96 0 S L95 AND L6
 L97 1 S L95 AND ?GLUCOSAMIN?

FILE 'BIOSIS' ENTERED AT 14:18:03 ON 16 FEB 2003

FILE 'MEDLINE' ENTERED AT 14:18:18 ON 16 FEB 2003

L98 2511 S L19
 E CHITIN/CT
 E E3+ALL
 L99 3764 S E5/BI, CN, CT
 L100 3764 S L98, L99
 L101 0 S L100 AND L12, L17
 L102 0 S L100 AND L18
 L103 1 S L100 AND L33
 E LECTIN
 L104 34177 S E3
 E LECTIN/CT
 E E30+ALL
 L105 54711 S E4+NT
 L106 177 S L104, L105 AND L100
 L107 45 S L106 AND ENZYMES+NT/CT
 L108 4 S L107 AND L6
 L109 13 S L107 AND ?GLUCOSAMIN?
 L110 13 S L108, L109
 SEL DN AN 1 8 10 13
 L111 4 S L110 AND E1-E12
 E INSECT/CT.
 L112 6158 S E84+NT
 E INSECTS/CT
 L113 105493 S E3+NT
 L114 286 S L100 AND L112, L113
 E ANTHROPOD/CT
 E E5+ALL
 E E2+ALL
 E ARTHROPOD/CT

E E57+ALL
L115 6923 S E28+NT
L116 130728 S E3+NT
L117 361 S L100 AND L115,L116
L118 15 S L114,L117 AND L106
SEL DN AN 11 14 15
L119 3 S L118 AND E1-9
SEL DN AN 7 10 L118
L120 2 S E10-E15
L121 9 S L111,L119,L120 AND L98-L120
L122 8 S L121 AND ?GLUCOSAMIN?
L123 9 S L121,L122
L124 1130 S FUNGI+NT/CT AND L100
L125 21 S L124 AND L115,L116
L126 20 S L124 AND L114
L127 22 S L125,L126 NOT L118,L123
L128 3 S L123 AND L124
L129 9 S L123,L128 AND L98-L128
L130 6 S L129 AND AGGLUTIN?
L131 9 S L129,L130

FILE 'MEDLINE' ENTERED AT 14:32:09 ON 16 FEB 2003